

**ATTACHMENT A:**

**SUMMARY OF CLIMATE STRATEGY UPDATES**

**PREPARED FOR:**

**UPDATED MACROECONOMIC ANALYSIS OF  
CLIMATE STRATEGIES PRESENTED IN THE  
MARCH 2006 CLIMATE ACTION TEAM REPORT**

**FINAL REPORT**

**PREPARED BY:**

**ECONOMICS SUBGROUP**

**CLIMATE ACTION TEAM**

**OCTOBER 15, 2007**

## TABLE OF CONTENTS

1. Introduction .....	1
2. California Air Resources Board.....	2
3. California Energy Commission.....	7
4. California Public Utilities Commission.....	10
5. California Department of Forestry and Fire Protection.....	13
6. California Department of Water Resources .....	16
7. California Integrated Waste Management Board .....	17
8. California Department of Transportation -- Business, Transportation, and Housing Agency.....	19
9. State Consumer Services Agency .....	20
10. California Department of Food and Agriculture .....	21

## **1. Introduction**

This attachment provides a brief summary of the updates performed to each of the climate strategies used in the macroeconomic analysis. A table is presented for each strategy that includes:

- the name of the strategy;
- the agency responsible for the strategy;
- the emissions impact, cost, and savings estimates for the strategy used in the March 2006 Climate Action Team Report macroeconomic analysis;
- the updated emissions impact, cost, and savings estimates for the strategy used in this macroeconomic analysis; and
- a brief description of the updates that were performed to the strategy.

Across all strategies, a consistent set of methods and assumptions was used for energy prices and energy-related greenhouse gas emissions and criteria pollutant emissions. These methods and assumptions are not explained under each strategy, but are presented in the main body of the report.

Of particular note is that many of the strategies continue to undergo analysis and refinement. Additional analyses are under way or planned to support the development of discrete early actions and the scoping plan. Consequently, the characterization of the strategies will continue to evolve and improve.

The summaries are organized by agency.

## 2. California Air Resources Board

<b>Strategy: Vehicle Climate Change Strategies</b>			
Agency: ARB			
	Estimates for 2020		
	Emission Reduction (MMT CO <sub>2</sub> e)	Costs (Million 2006 \$)	Savings (Million 2006 \$)
<b>March 2006 Estimates</b>	30.00	\$1,204	\$6,267
<b>August 2007 Updated Estimates</b>	30.00	\$1,331	\$6,643
Major Changes: No changes to the strategy. Costs and savings restated as 2006 dollars.			

<b>Strategy: Diesel Anti-Idling</b>			
Agency: ARB			
	Estimates for 2020		
	Emission Reduction (MMT CO <sub>2</sub> e)	Costs (Million 2006 \$)	Savings (Million 2006 \$)
<b>March 2006 Estimates</b>	1.20	\$173	\$233
<b>August 2007 Updated Estimates</b>	1.46	\$58	\$322
Major Changes: The updates to the strategy reflect more detailed calculations based on the additional information and updated emission reduction estimates from ARB's Economic and Fiscal Impact Statement (Form 399) for the regulation, which contained detailed information on the capital costs of Auxiliary Power Units. Updated emissions factors and energy prices applied to all strategies and are incorporated. Updated cost estimate includes approximately \$450 million of capital costs (2006 dollars) levelized using a 5% discount rate over 10 years.			

<b>Strategy: Other New Light Duty Vehicle Technology Improvements</b>			
Agency: ARB			
	Estimates for 2020		
	Emission Reduction (MMT CO <sub>2</sub> e)	Costs (Million 2006 \$)	Savings (Million 2006 \$)
<b>March 2006 Estimates</b>	5.40	\$1,455	\$1,302
<b>August 2007 Updated Estimates</b>	5.40	\$1,569	\$1,355
Major Changes: No changes to the strategy. Costs and savings restated as 2006 dollars.			

<b>Strategy: HFC Reduction Strategies</b>			
Agency: ARB			
	<b>Estimates for 2020</b>		
	<b>Emission Reduction (MMT CO<sub>2</sub>e)</b>	<b>Costs (Million 2006 \$)</b>	<b>Savings (Million 2006 \$)</b>
<b>March 2006 Estimates</b>	8.50	\$12	\$0
<b>August 2007 Updated Estimates</b>	8.7	\$276	\$201
<p>Major Changes:</p> <p>All five sub-strategies contained in the HFC Reduction Strategies have been revised for inclusion in the ARB Early Action Plan pursuant to AB 32. Additional analysis has yielded new estimates for costs and economic impacts as reflected in the revised work plan. Further, two of the five sub-strategies have evolved and been refined into more focused actions. Sub-strategy 2-2-1 on mitigation of refrigerant emissions from the non-professional servicing of motor vehicle air conditioning system was approved by the Air Resources Board as a discrete early action measure to be developed and implemented by 1/1/2010. Sub-strategy 2-2-3 on mitigation of emissions from stationary refrigeration and air conditioning sources was approved by the Board as an early action for late 2010. Since the CAT work plans was drafted the commercial refrigeration strategy has since evolved into multiple strategies including a program focused on tracking, reporting, and recovery of HFC use. The strategy focused is refrigerant tracking, reporting, and recovery. Updated emissions factors and energy prices applied to all strategies are incorporated.</p> <p>Updated cost estimate includes approximately \$1.34 billion of capital costs (2006 dollars) levelized using a 5% discount rate over the lifetime of the equipment (18 to 20 years).</p>			

<b>Strategy: Transport Refrigeration Units (on and off road) and Shore Electrification</b>			
Agency: ARB			
	<b>Estimates for 2020</b>		
	<b>Emission Reduction (MMT CO<sub>2</sub>e)</b>	<b>Costs (Million 2006 \$)</b>	<b>Savings (Million 2006 \$)</b>
<b>March 2006 Estimates</b>	0.30	\$23	\$0
<b>August 2007 Updated Estimates</b>	0.57	\$171	\$132
<p>Major Changes:</p> <p>The revised estimates separate the two main components: transport refrigeration units and shore electrification. The transport refrigeration unit strategy originally specified electric standby plug-in infrastructure at large refrigerated distribution centers. This strategy was revised to allow for electrification as an option to reduce the amount of transport refrigeration unit engine operation that occurs at a facility. The estimated emission reduction for port electrification increased because it assumes that 80 percent instead of 25 percent of ship visits use shore-side power in 2020. Updated emissions factors and energy prices applied to all strategies are incorporated.</p> <p>Updated cost estimate includes approximately \$687 million of capital costs (2006 dollars) levelized using a 5% discount rate over the life of the equipment (10 to 20 years).</p>			

<b>Strategy: Manure Management</b>			
Agency: ARB			
	<b>Estimates for 2020</b>		
	<b>Emission Reduction (MMT CO<sub>2</sub>e)</b>	<b>Costs (Million 2006 \$)</b>	<b>Savings (Million 2006 \$)</b>
<b>March 2006 Estimates</b>	1.00	\$34	\$8
<b>August 2007 Updated Estimates</b>	1.00	\$45	\$9
Major Changes: No significant changes to the strategy. Updated costs reflect a refinement to the cost calculation, taking into account both the net cost-effectiveness and the annual benefits provided by UC Berkeley. Both costs and savings are restated in 2006 dollars. Updated emissions factors and energy prices applied to all strategies are incorporated.			

<b>Strategy: PFC Emission Reduction for Semiconductor Manufacturers</b>			
Agency: ARB			
	<b>Estimates for 2020</b>		
	<b>Emission Reduction (MMT CO<sub>2</sub>e)</b>	<b>Costs (Million 2006 \$)</b>	<b>Savings (Million 2006 \$)</b>
<b>March 2006 Estimates</b>	2.00	\$69	\$0
<b>August 2007 Updated Estimates</b>	0.53	\$27	\$0
Major Changes: The updated estimates reflect revised estimates of the costs and impacts of specific technologies that may be used to reduce these emissions. The updated estimates are based on the CEC emissions inventory and the assumption that all semiconductor facilities achieve the voluntary target outlined in the MOU between the U.S. EPA and the Semiconductor Industry Association. Updated emissions factors and energy prices applied to all strategies are incorporated.			

<b>Strategy: Alternative Fuels: Biodiesel Blends</b>			
Agency: ARB			
	<b>Estimates for 2020</b>		
	<b>Emission Reduction (MMT CO<sub>2</sub>e)</b>	<b>Costs (Million 2006 \$)</b>	<b>Savings (Million 2006 \$)</b>
<b>March 2006 Estimates</b>	0.80	\$0	\$0
<b>August 2007 Updated Estimates</b>	0.80	\$0	\$0
Major Changes: No changes to the strategy. Costs and savings have not yet been estimated. The biodiesel blend strategy has been superseded by the Low Carbon Fuel Standard. The Low Carbon Fuel Standard was approved by the Air Resources Board as a discrete early action measure on June 21, 2007 and is under development.			

<b>Strategy: Alternative Fuels: Ethanol</b>			
Agency: ARB			
	<b>Estimates for 2020</b>		
	<b>Emission Reduction (MMT CO<sub>2</sub>e)</b>	<b>Costs (Million 2006 \$)</b>	<b>Savings (Million 2006 \$)</b>
<b>March 2006 Estimates</b>	2.70	\$645	\$0
<b>August 2007 Updated Estimates</b>	2.38	\$3,102	\$2,233
<p>Major Changes:</p> <p>The revised strategy estimates reflect a more thorough calculation of the costs, savings, and emission reduction. The new calculations takes into account the amount of ethanol called for by the strategy, energy content of gasoline and ethanol, double-counting with other strategies that affect gasoline consumption, and the effect of this strategy on the price of ethanol. However, the alternative fuel strategy for ethanol has been superseded by the Low Carbon Fuel Standard. The Low Carbon Fuel Standard was approved by the Air Resources Board as a discrete early action measure on June 21, 2007 and is under development. Updated emissions factors and energy prices applied to all strategies are incorporated.</p>			

<b>Strategy: Heavy-Duty Vehicle Emission Reduction Measures</b>			
Agency: ARB			
	<b>Estimates for 2020</b>		
	<b>Emission Reduction (MMT CO<sub>2</sub>e)</b>	<b>Costs (Million 2006 \$)</b>	<b>Savings (Million 2006 \$)</b>
<b>March 2006 Estimates</b>	3.00	\$244	\$583
<b>August 2007 Updated Estimates</b>	3.15	\$136	\$698
<p>Major Changes:</p> <p>Many parts of this strategy are currently being developed as separate emission reduction measures. Such measures include the SmartWay Truck Efficiency and Hybridization of Medium- and Heavy-Duty Vehicles. Therefore, this strategy and the associated benefit and cost estimates do not reflect the effect of other similar measures being developed.</p> <p>Updated cost estimate includes approximately \$1.7 billion of capital costs (2006 dollars) levelized using a 5% discount rate over the 20 year life of the equipment.</p>			

<b>Strategy: Reduced Venting and Leaks in Oil and Gas Systems</b>			
Agency: ARB			
	Estimates for 2020		
	Emission Reduction (MMT CO <sub>2</sub> e)	Costs (Million 2006 \$)	Savings (Million 2006 \$)
<b>March 2006 Estimates</b>	1.00	\$8	\$8
<b>August 2007 Updated Estimates</b>	1.00	\$10	\$9
Major Changes: No changes to the strategy. Costs and savings restated as 2006 dollars.			

<b>Strategy: Hydrogen Highway</b>			
Agency: ARB			
	Estimates for 2020		
	Emission Reduction (MMT CO <sub>2</sub> e)	Costs (Million 2006 \$)	Savings (Million 2006 \$)
<b>March 2006 Estimates</b>	--	--	--
<b>August 2007 Updated Estimates</b>	--	--	--
Major Changes: No changes to the strategy. Separate estimates for this strategy have not been prepared to date, as the implications are reflected in related strategies.			



### 3. California Energy Commission

<b>Strategy: Building Energy Efficiency Standards (In Place)</b>			
Agency: CEC			
	Estimates for 2020		
	Emission Reduction (MMT CO <sub>2</sub> e)	Costs (Million 2006 \$)	Savings (Million 2006 \$)
<b>March 2006 Estimates</b>	2.00	\$176	\$422
<b>August 2007 Updated Estimates</b>	2.14	\$255	\$658
<p>Major Changes:</p> <p>Improved characterization of energy reductions in 2020 due to the standards that take into account the persistence of the measures over many decades. Updated emissions factors and energy prices applied to all strategies are incorporated.</p> <p>Updated cost estimate includes approximately \$3.5 billion of capital costs (2006 dollars) levelized using a 5% discount rate over the life of the building (30 years for residential and 15 years for commercial).</p>			

<b>Strategy: Appliance Energy Efficiency Standards (In Place)</b>			
Agency: CEC			
	Estimates for 2020		
	Emission Reduction (MMT CO <sub>2</sub> e)	Costs (Million 2006 \$)	Savings (Million 2006 \$)
<b>March 2006 Estimates</b>	5.00	\$152	\$931
<b>August 2007 Updated Estimates</b>	4.48	\$509	\$1,489
<p>Major Changes:</p> <p>Improved characterization of energy reductions in 2020 due to the standards that take into account the persistence of the measures due to the long useful life of appliances. Updated emissions factors and energy prices applied to all strategies are incorporated.</p> <p>Updated cost estimate includes approximately \$5.3 billion of capital costs (2006 dollars) levelized using a 5% discount rate over the life of the appliances (15 years).</p>			

<b>Strategy: Fuel-Efficient Tire Program</b>			
Agency: CEC			
	Estimates for 2020		
	Emission Reduction (MMT CO <sub>2</sub> e)	Costs (Million 2006 \$)	Savings (Million 2006 \$)
<b>March 2006 Estimates</b>	1.50	\$74	\$1,056
<b>August 2007 Updated Estimates</b>	0.33	\$1	\$87
Major Changes: The updated strategy reflects recent preliminary test data revealing that currently available replacement tires, on average, provide for more fuel efficiency than anticipated relative to original vehicle equipment. Updated emissions factors and energy prices applied to all strategies are incorporated.			

<b>Strategy: Cement Manufacturing</b>			
Agency: CEC			
	Estimates for 2020		
	Emission Reduction (MMT CO <sub>2</sub> e)	Costs (Million 2006 \$)	Savings (Million 2006 \$)
<b>March 2006 Estimates</b>	1.00	\$2	\$7
<b>August 2007 Updated Estimates</b>	1.00	\$3	\$8
Major Changes: No significant changes to the strategy. Updated emissions factors and energy prices applied to all strategies are incorporated.			

<b>Strategy: Comprehensive Municipal Utility Program</b>			
Agency: CEC			
	Estimates for 2020		
	Emission Reduction (MMT CO <sub>2</sub> e)	Costs (Million 2006 \$)	Savings (Million 2006 \$)
<b>March 2006 Estimates</b>	18.40	\$355	\$1,136
<b>August 2007 Updated Estimates</b>	18.01	\$1,848	\$2,147
Major Changes: The individual strategies focusing on municipal utilities have been combined into a comprehensive municipal utility strategy. The elements of the strategy and the goals for each are under development in conjunction with the municipal utilities. The emission reduction estimate used in this version of the strategy is designed to be consistent with the March 2006 CAT report estimate. Further refinements are anticipated. Updated emissions factors and energy prices applied to all strategies are incorporated.			

<b>Strategy: Alternative Fuels: Non-Petroleum Fuels</b>			
Agency: CEC			
	<b>Estimates for 2020</b>		
	<b>Emission Reduction (MMT CO<sub>2</sub>e)</b>	<b>Costs (Million 2006 \$)</b>	<b>Savings (Million 2006 \$)</b>
<b>March 2006 Estimates</b>	--	--	--
<b>August 2007 Updated Estimates</b>	--	--	--
Major Changes: No changes to the strategy. Estimates are still to be determined.			

#### 4. California Public Utilities Commission

<b>Strategy: Accelerated RPS to 33% by 2020</b>			
Agency: CPUC			
	Estimates for 2020		
	Emission Reduction (MMT CO <sub>2</sub> e)	Costs (Million 2006 \$)	Savings (Million 2006 \$)
<b>March 2006 Estimates</b>	11.00	\$96	\$0
<b>August 2007 Updated Estimates</b>	8.20	\$100	\$0
Major Changes: No significant changes to the strategy. Updated emissions factors and energy prices applied to all strategies are incorporated. Updated cost estimate includes approximately \$1.25 billion of capital costs (2006 dollars) levelized using a 5% discount rate over the life of equipment (20 years).			

<b>Strategy: California Solar Initiative</b>			
Agency: CPUC			
	Estimates for 2020		
	Emission Reduction (MMT CO <sub>2</sub> e)	Costs (Million 2006 \$)	Savings (Million 2006 \$)
<b>March 2006 Estimates</b>	3.00	\$1,440	\$633
<b>August 2007 Updated Estimates</b>	0.92	\$890	\$322
Major Changes: Strategy reflects updated estimates of the amount of solar capacity installed over time, the cost of that capacity, and the impact of the operation of the capacity in 2020. Updated emissions factors and energy prices applied to all strategies are incorporated. Updated cost estimate includes approximately \$11.3 billion of capital costs (2006 dollars) levelized using a 5% discount rate over the life of the systems (25 years).			

<b>Strategy: IOU Energy Efficiency Programs</b>			
Agency: CPUC			
	<b>Estimates for 2020</b>		
	<b>Emission Reduction (MMT CO<sub>2</sub>e)</b>	<b>Costs (Million 2006 \$)</b>	<b>Savings (Million 2006 \$)</b>
<b>March 2006 Estimates</b>	8.80	\$577	\$2,109
<b>August 2007 Updated Estimates</b>	3.66	\$987	\$1,186
<p>Major Changes:</p> <p>Strategy reflects updated estimates of the amount of energy efficiency achieved over time, and explicitly considers the persistence of the energy efficiency measures and the impact on savings in 2020. Updated emissions factors and energy prices applied to all strategies are incorporated. Updated cost estimate includes nine years of capital costs totaling approximately \$15.2 billion (2006 dollars) levelized using a 5% discount rate over the lifetimes of the energy efficiency measures.</p>			

<b>Strategy: Additional IOU Energy Efficiency Programs</b>			
Agency:			
	<b>Estimates for 2020</b>		
	<b>Emission Reduction (MMT CO<sub>2</sub>e)</b>	<b>Costs (Million 2006 \$)</b>	<b>Savings (Million 2006 \$)</b>
<b>March 2006 Estimates</b>	6.30	\$245	\$1,173
<b>August 2007 Updated Estimates</b>	5.60	\$1,690	\$1,790
<p>Major Changes:</p> <p>Strategy reflects updated estimates of the amount of energy efficiency achieved over time, and explicitly considers the persistence of the energy efficiency measures and the impact on savings in 2020. Updated emissions factors and energy prices applied to all strategies are incorporated. Updated cost estimate includes seven years of capital costs totaling approximately \$13.6 billion (2006 dollars) levelized using a 5% discount rate over the lifetimes of the energy efficiency measures.</p>			

<b>Strategy: IOU CHP (Self Generation Incentive Program)</b>			
Agency: CPUC			
	<b>Estimates for 2020</b>		
	<b>Emission Reduction (MMT CO<sub>2</sub>e)</b>	<b>Costs (Million 2006 \$)</b>	<b>Savings (Million 2006 \$)</b>
<b>March 2006 Estimates</b>	4.40	\$114	\$555
<b>August 2007 Updated Estimates</b>	To be determined	To be determined	To be determined
<p>Major Changes:</p> <p>Updated strategy reflects a redefinition of the strategy to focus on the Self Generation Incentive Program. The CPUC's Self-Generation Incentive Program (SGIP) is a statewide program that provides financial incentives to customers for the installation of certain renewable and clean generation technologies that provide electricity for all or a portion of the customer's electric load. The program began in 2001 and was originally authorized through 2004, but was then extended through 2007. However, as of Jan 1, 2007 the program no longer covers solar technologies. In addition, beginning in 2008, the program is limited to fuel cells and wind distributed generation technologies that meet or exceed the emissions standards required under the distributed generation certification program adopted by the State Air Resources Board.</p>			

<b>Strategy: IOU Carbon Sector Policy, including SB 1368 Implementation for IOUs</b>			
Agency: CPUC			
	<b>Estimates for 2020</b>		
	<b>Emission Reduction (MMT CO<sub>2</sub>e)</b>	<b>Costs (Million 2006 \$)</b>	<b>Savings (Million 2006 \$)</b>
<b>March 2006 Estimates</b>	2.70	\$27	\$0
<b>August 2007 Updated Estimates</b>	To be determined	To be determined	To be determined
<p>Major Changes:</p> <p>The IOU carbon sector policy is under development at the CPUC. The ongoing analysis will provide a basis for establishing an emission reduction target for the sector. The August 2007 modeling analyzes electric sector emission reductions separate from this strategy.</p>			

## 5. California Department of Forestry and Fire Protection

<b>Strategy: Conservation Forest Management</b>			
Agency: Forestry			
	<b>Estimates for 2020</b>		
	<b>Emission Reduction (MMT CO<sub>2</sub>e)</b>	<b>Costs (Million 2006 \$)</b>	<b>Savings (Million 2006 \$)</b>
<b>March 2006 Estimates</b>	2.00	\$46	\$0
<b>August 2007 Updated Estimates</b>	2.35	\$4	\$0
<p>Major Changes:</p> <p>No significant changes to the strategy. Refined detailed estimates of carbon sequestration and costs. The revised estimates are limited to two types of projects based on riparian areas. One is a report of regulatory action where additional carbon is stored in mandated buffer zones and the other is a market opportunity if riparian buffer zones are expanded. Current activities indicate that landowners do desire to participate in carbon markets as they develop and that a broader suite of project types (rotation lengths, site occupancy, etc.) will be utilized. Subsequent updates should show even a greater increase in potential carbon sequestration.</p>			

<b>Strategy: Forest Conservation</b>			
Agency: Forestry			
	<b>Estimates for 2020</b>		
	<b>Emission Reduction (MMT CO<sub>2</sub>e)</b>	<b>Costs (Million 2006 \$)</b>	<b>Savings (Million 2006 \$)</b>
<b>March 2006 Estimates</b>	8.40	\$126	\$0
<b>August 2007 Updated Estimates</b>	0.40	\$15	\$0
<p>Major Changes:</p> <p>The emission reduction potential of this strategy has been re-characterized. The March 2006 estimate reflected the cumulative carbon emission reduction <b>through 2020</b>. The August 2007 estimate is for the anticipated carbon emission reduction <b>in 2020</b>. The strategy has also been revised based on detailed analyses of the amount of forest land to which forest conservation activities may be applied based on current expectation of resources available. Adjustments were also made as to the percent of carbon benefits gained where changes in land use occur. Updated emissions factors and energy prices applied to all strategies are incorporated. Updated cost estimate includes approximately \$185 million of capital costs (2006 dollars) levelized using a 5% discount rate over the 20 year life of the facilities.</p>			

<b>Strategy: Fuels Management/Biomass</b>			
Agency: Forestry			
	<b>Estimates for 2020</b>		
	<b>Emission Reduction (MMT CO<sub>2</sub>e)</b>	<b>Costs (Million 2006 \$)</b>	<b>Savings (Million 2006 \$)</b>
<b>March 2006 Estimates</b>	6.80	\$136	\$0
<b>August 2007 Updated Estimates</b>	2.95	\$1,305	\$1,559
<p>Major Changes:</p> <p>The strategy has been revised based on detailed analyses of the amount of forest land to which the fuels management and biomass utilization activities may be applied based on current expectation of resources available. This strategy will need to be reassessed when research results on the carbon benefit of fuels management begin to be released during 2009. Updated emissions factors and energy prices applied to all strategies are incorporated.</p> <p>Updated cost estimate includes approximately \$2.2 billion of capital costs (2006 dollars) levelized using a 5% discount rate over the 30 year life of the facilities.</p>			

<b>Strategy: Urban Forestry</b>			
Agency: Forestry			
	<b>Estimates for 2020</b>		
	<b>Emission Reduction (MMT CO<sub>2</sub>e)</b>	<b>Costs (Million 2006 \$)</b>	<b>Savings (Million 2006 \$)</b>
<b>March 2006 Estimates</b>	3.50	\$40	\$651
<b>August 2007 Updated Estimates</b>	0.88	\$287	\$155
<p>Major Changes:</p> <p>The emission reduction potential of this strategy has been re-characterized. The March 2006 estimate reflected the cumulative carbon emission reduction <b>through 2020</b>. The August 2007 estimate is for the anticipated carbon emission reduction <b>in 2020</b>. A protocol for this strategy is under development and will be completed in 2008. This strategy needs to be reviewed after the protocol has been approved and applied to actual projects. Actual project results will allow a more accurate projection of the carbon benefit potential of this strategy. Updated emissions factors and energy prices applied to all strategies are incorporated.</p> <p>Updated cost estimate includes approximately \$200 million of tree planting costs and \$700 million of capital costs (2006 dollars) levelized using a 5% discount rate over the 50 year life of the trees and 30 year life of the facilities.</p>			



<b>Strategy: Afforestation/Reforestation</b>			
Agency: Forestry			
	<b>Estimates for 2020</b>		
	<b>Emission Reduction (MMT CO<sub>2</sub>e)</b>	<b>Costs (Million 2006 \$)</b>	<b>Savings (Million 2006 \$)</b>
<b>March 2006 Estimates</b>	12.50	\$250	\$0
<b>August 2007 Updated Estimates</b>	1.98	\$21	\$0
<p>Major Changes:</p> <p>The emission reduction potential of this strategy has been re-characterized. The March 2006 estimate reflected the cumulative carbon emission reduction <b>through 2020</b>. The August 2007 estimate is for the anticipated carbon emission reduction <b>in 2020</b>.</p> <p>Updated cost estimate includes approximately \$192 million of capital costs (2006 dollars) levelized using a 5% discount rate over the 20 year life of the investments.</p>			

## 6. California Department of Water Resources

<b>Strategy: Water Use Efficiency</b>			
Agency: DWR			
	<b>Estimates for 2020</b>		
	<b>Emission Reduction (MMT CO<sub>2</sub>e)</b>	<b>Costs (Million 2006 \$)</b>	<b>Savings (Million 2006 \$)</b>
<b>March 2006 Estimates</b>	1.20	\$29	\$253
<b>August 2007 Updated Estimates</b>	0.51	\$90	\$358
<p>Major Changes:</p> <p>Updated the strategy to reflect revised estimates of water saved and reduced energy requirements due to water efficiency activities undertaken by DWR. Added estimates of the value of the water saved, as well as costs for implementing the strategy activities themselves. The revised 2020 emission reduction excludes GHG reductions from water savings that result from State Codes and regulations. The 2020 water savings costs and cost savings are based on the 2005 Water Plan Update and estimates by the California Bay Delta Authority Comprehensive Evaluation Report, August 2006. Updated emissions factors and energy prices applied to all strategies are also incorporated. DWR did not estimate the cost and cost savings from water conservation for the March 2006 report.</p> <p>Updated cost estimate includes approximately \$1.1 billion of capital costs (2006 dollars) levelized using a 5% discount rate over the 20 year life of the facilities and equipment.</p>			

## 7. California Integrated Waste Management Board

<b>Strategy: Achieve 50% Statewide Recycling Goal</b>			
Agency: IWMB			
	Estimates for 2020		
	Emission Reduction (MMT CO <sub>2</sub> e)	Costs (Million 2006 \$)	Savings (Million 2006 \$)
<b>March 2006 Estimates</b>	3.00	\$82	\$0
<b>August 2007 Updated Estimates</b>	3.00	\$82	\$0
Major Changes: No changes to the strategy. Updated emissions factors and energy prices applied to all strategies are incorporated.			

<b>Strategy: Landfill Methane Capture</b>			
Agency: IWMB			
	Estimates for 2020		
	Emission Reduction (MMT CO <sub>2</sub> e)	Costs (Million 2006 \$)	Savings (Million 2006 \$)
<b>March 2006 Estimates</b>	3.00	\$29	\$24
<b>August 2007 Updated Estimates</b>	2.66	\$61	\$171
Major Changes: No significant changes to the strategy. More detailed analyses of costs and savings are reflected. Updated emissions factors and energy prices applied to all strategies are incorporated. Updated cost estimate includes approximately \$145 million of capital costs (2006 dollars) levelized using a 5% discount rate over the 15 year life of the equipment.			

<b>Strategy: Zero Waste – High Recycling</b>			
Agency: IWMB			
	<b>Estimates for 2020</b>		
	<b>Emission Reduction (MMT CO<sub>2</sub>e)</b>	<b>Costs (Million 2006 \$)</b>	<b>Savings (Million 2006 \$)</b>
<b>March 2006 Estimates</b>	3.00	\$82	\$0
<b>August 2007 Updated Estimates</b>	3.00	\$180	\$111
<p>Major Changes:</p> <p>No significant changes to the strategy. More detailed analyses of costs and savings of technologies are reflected. Updated emissions factors and energy prices applied to all strategies are incorporated.</p> <p>Updated cost estimate includes approximately \$740 million of capital costs (2006 dollars) levelized using a 5% discount rate over the 20 year life of the facilities.</p>			

## 8. California Department of Transportation -- Business, Transportation, and Housing Agency

<b>Strategy: Smart Land Use and Intelligent Transportation and Measures to Improve Transportation Energy Efficiency</b>			
Agency: BTH (Caltrans)			
	<b>Estimates for 2020</b>		
	<b>Emission Reduction (MMT CO<sub>2</sub>e)</b>	<b>Costs (Million 2006 \$)</b>	<b>Savings (Million 2006 \$)</b>
<b>March 2006 Estimates</b>	27.00	\$0	\$0
<b>August 2007 Updated Estimates</b>	18.67	\$2,190	\$2,190
<b>Major Changes:</b> The updated strategy reflects more in-depth analysis and a more conservative assessment of emission reductions that can be achieved by 2020. The March 2006 figures were preliminary pending further analysis and refinements. The revised costs and savings estimates remain preliminary, and are expected to be refined over time. The costs reflect the costs of projects conducted for multiple transportation and planning benefits, and are not solely associated with efforts to reduce GHG emissions.			

## 9. State Consumer Services Agency

<b>Strategy: Green Buildings Initiative</b>			
Agency: SCSA			
	<b>Estimates for 2020</b>		
	<b>Emission Reduction (MMT CO<sub>2</sub>e)</b>	<b>Costs (Million 2006 \$)</b>	<b>Savings (Million 2006 \$)</b>
<b>March 2006 Estimates</b>	1.80	\$0	\$0
<b>August 2007 Updated Estimates</b>	1.80	\$559	\$559
Major Changes: No significant changes to the strategy. Updated emissions factors and energy prices applied to all strategies are incorporated.			

<b>Strategy: Transportation Policy Implementation</b>			
Agency: SCSA			
	<b>Estimates for 2020</b>		
	<b>Emission Reduction (MMT CO<sub>2</sub>e)</b>	<b>Costs (Million 2006 \$)</b>	<b>Savings (Million 2006 \$)</b>
<b>March 2006 Estimates</b>	--	--	--
<b>August 2007 Updated Estimates</b>	--	--	--
Major Changes: No changes to the strategy, for which no estimates have been prepared to date.			

## **10. California Department of Food and Agriculture**

No climate strategies were updated for the Department of Food and Agriculture.